

APPENDIX 7 - LEVEL OF SERVICE (LOS)

In Section IV.I. of the Zoning By-Law (Site Plan Review) the standard set forth for traffic impacts is based on the concept of “*level of service*” (“LOS”). Level of service is a qualitative measure of the operating condition of a transportation facility, such as an intersection or highway link, at specific traffic volumes. It is divided into six classes described as follows:

LOS	OPERATING CONDITIONS
A	Free flow, low volume, high operating speed, high maneuverability.
B	Stable flow, moderate volume; speed somewhat restricted by traffic conditions, high maneuverability.
C	Stable flow, high volume; speed and maneuverability determined by traffic conditions.
D	Unstable flow, high volumes, tolerable but fluctuating operating speed and maneuverability.
E	Unstable flow, high volumes approaching roadway capacity, limited speed, intermittent vehicle queuing.
F	Forced flow, volumes lower than capacity due to very low speeds. Heavy queuing of vehicles, frequent stoppages.

[Source: "Quick-Response Urban Travel Estimation Techniques and Transferable Parameters: User's Guide", National Cooperative Highway Research Program Report 187, Transportation Research Board, National Research Council, 1978]

LOS is determined differently for highways, signalized intersections, and unsignalized intersections. Capacity and level of service of signalized intersections are determined using a procedure known as Critical Movement Analysis. In this method, LOS is determined by vehicle delay and “volume/capacity (V/C) ratio”, which is the sum of “critical volumes” for the intersection divided by the theoretical capacity of the intersection. The following table summarizes the delay and V/C values for signalized intersections:

Level of Service	Typical V/C Ratio	Delay Range (sec/vehicle)
A	.00-0.60	0.0-16.0
B	.61-0.70	6.1-22.0
C	.71-0.80	22.1-28.0
D	0.81-0.90	28.1-35.0
E	0.91-1.00	35.1-40.0
F	varies	40.1 or greater

[Source: "Interim Materials on Highway Capacity", Transportation Research Circular No. 212, Transportation Research Board, National Academy of Sciences, January 1980, pp. 5 - 12.]